50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status and Critical Habitat for the Desert Pupfish (Cyprinodon macularius)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine the desert pupfish (*Cyprinodon macularius*) to be an endangered species and to designate its critical habitat. This proposal, if made final, would implement Federal protection provided by the Endangered Species Act of 1973, as amended. The desert pupfish has been drastically reduced in numbers and distribution because of competition for food and space with exotic fishes, predation by exotic fish species, and habitat losses resulting from dam construction, streambank erosion, stream channelization, groundwater pumping, water pollution, and the lining and dredging of irrigation drains. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by July 16, 1984. Public hearing requests must be received by July 2, 1984.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232. Comments and materials relating to this proposal are available for public inspection by appointment during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Mr. Sanford R. Wilbur, Endangered Species Coordinator, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232 (503/231–6131; FTS 429–6131).

SUPPLEMENTARY INFORMATION:

Background

The desert pupfish (*Cyprinodon macularius*) is a small, laterally-

compressed fish with a smoothly rounded body shape. Adult fish rarely grow larger than 75 mm in total length. Males are larger than females and during the reproductive season become brightly colored with blue on the dorsal portion of the head and sides and yellow on the caudal fin and the posterior part of the caudal peduncle. Females and juveniles typically have tan to olive backs and silvery sides. Most adults have narrow, vertical, dark bars on their sides, which are often interrupted to give the impression of a broken, lateral band. The desert pupfish was described in 1853 by Baird and Girard from specimens collected in the San Pedro River of Arizona.

Desert pupfish were once common in the desert springs, marshes, and tributary streams of the lower Gila and Colorado River drainages in Arizona, California, and Mexico. They also formerly occurred in the slow-moving reaches of some large rivers including the Colorado, Gila, San Pedro, and Santa Cruz Rivers. The current distribution is restricted to Salt Creek, San Felipe Creek and its associated wetland, San Sebastian Marsh, and a few shoreline pools and irrigation drains along the Salton Sea in California; Quitobaquito Spring within Organ Pipe Cactus National Monument in Arizona; and the Sonoyta River drainage and Santa Clara Slough in Sonora, Mexico. Recent surveys of Salt Creek and the irrigation drains around the Salton Sea (Moore 1983) and the Sonoyta River (McMahon and Miller 1984) indicate that these populations may now be reduced to such low levels that they are no longer viable. The status of the population in Santa Clara Slough is not presently known, but it is possible that the flood that inundated vast reaches of the Colorado River delta in 1983 may have given tilapia (*Tilapia zillii*), largemouth bass (*Micropterus salmoides*), and other exotic fishes that compete with, or prey upon, desert pupfish access to this slough.

Desert pupfish are adapted to harsh desert environments and are capable of surviving extreme environmental conditions. They have been reported to survive water temperatures in excess of 110° F (Moyle 1976), oxygen levels as low as 0.1 to 0.4 parts per million (Lowe *et al.* 1967), and salinities nearly twice that of seawater (Barlow 1958). They are also capable of surviving daily temperature fluctuations of 45° F (Lowe and Heath 1969) and salinity changes of as much as 10 to 15 parts per thousand (Kinne 1960). Although desert pupfish are extremely hardy in many respects, they cannot tolerate competition or predation and are thus readily displaced by exotic fishes.

Desert pupfish mature rapidly and may produce up to three generations per year. Spawning males typically defend a small spawning and feeding territory in shallow water. The eggs are usually laid and fertilized on a flocculent substrate and hatch within a few days. After a few hours the young begin to feed on small plants and animals. Spawning occurs throughout the spring and summer months. Individuals typically survive for about a year.

These characteristics, along with the adaptability of the desert pupfish to laboratory aquaria, make it a valuable research animal for ichthyologists and other biologists. A great deal has been learned from this species about fish ecology, genetics, behavior, and physiology. In addition, the rapidity with which the desert pupfish and other members of the genus *Cyprinodon* differentiated into distinct species may give scientists valuable insights into the process of speciation.

The desert pupfish was included in the Service's December 30, 1982, Review of Vertebrate Wildlife for Listing as Endangered or Threatened Species (47 FR 58454–58460). In that review, the desert pupfish was classified as a category 1 species indicating that the Service currently has substantial information on hand to support a proposed rule to list the species as endangered or threatened. On April 12, 1983, the Service was petitioned by the Desert Fishes Council to list the desert pupfish. The Service published a notice of finding on June 14, 1983 (48 FR 27273–27274) indicating that substantial information was presented in the petition to indicate that action may be warranted to list the desert pupfish as endangered or threatened. The State of California classified the desert pupfish as an endangered species in 1980.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and the regulations promulgated to implement the listing provisions of the Act (codified at 50 CFR Part 424; under revision to accommodate 1982 Amendments—see proposal at 48 FR 36062, August 8, 1983) set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or a threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the desert pupfish (*Cyprinodon macularius*) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. At the beginning of the 20th Century, the desert pupfish was widespread throughout the lower Gila River and its tributaries, the San Pedro and Santa Cruz rivers, and the lower Colorado River in Arizona, California, and Baja California and Sonora, Mexico. Starting in the 1880's, many desert rivers began experiencing major erosional cycles that resulted in the loss of permanent waters in numerous pupfish streams and the drying up of the shallow, littoral areas preferred by this species. Miller (1961) related this increase in erosion to overgrazing. The construction of mainstream dams on the Gila, Colorado, and Salt rivers for irrigation and flood control dewatered the lower Gila and Salt rivers and eliminated the marshy sidepools in the Colorado River that were preferred by desert pupfish. After this occurred, the pupfish were forced into the mainstream channels of the remaining permanent streams where they were eaten by predators or outcompeted by native and exotic species.

The desert pupfish in the Salton Sea area have been severely reduced in numbers and distribution as the result of the introduction of exotic fish species, modifications to the water conveyance facilities used for irrigating and draining agricultural lands, the application of agricultural pesticides, and the dewatering of natural spring habitats by groundwater pumping. These factors, in combination, have reduced pupfish numbers in most habitats to such low levels that their long-term survival prospects are poor.

The only known habitat in California in which the desert pupfish makes up a dominant part of the fish fauna is a short reach of San Felipe Creek near San Sebastian Marsh (Black 1980). However, the integrity of this habitat is threatened by a proposal to convert the privately owned lands to irrigated agriculture. The removal of large volumes of groundwater from the aquifers that feed San Felipe Creek could cause the marsh to become desiccated and destroy its habitat value for pupfish. Geothermal exploration is also a potential threat to this habitat. Geothermal lease applications have been filed with the Bureau of Land Management for some tracts in the vicinity of San Sebastian marsh. If geothermal energy is discovered in this area in commercially marketable quantities, it is likely the privately owned lands around San Sebastian Marsh could be developed with adverse consequences to the

pupfish habitat. The Federal lands around Salt Creek have already been leased for geothermal exploration.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* A few individuals are occasionally taken incidentally from the Salton Sea by anglers collecting sailfin mollies (*Poecilia latipinna*) for bait. However, there is no evidence that desert pupfish are currently overutilized for any purpose.

C. *Disease or predation.* Several known predators and competitors of desert pupfish have become established in the natural and manmade tributaries of the Salton Sea, including tilapia (*Tilapia mossambica* and *Tilapia zillii*), sailfin molies, shortfin mollies (*Poecilia mexicana*), mosquitofish (*Gambusia affinis*), porthole livebearers (*Poeciliopsis gracilis*), and several members of the families Centrarchidae, Ictaluridae, and Cyprinidae. In Arizona, desert pupfish have been displaced from many of their historic spring habitats by largemouth bass (*Micropterus salmoides*).

Recent studies have shown that juvenile tilapia compete with desert pupfish for many of the same food items, and that adults prey on fish and fish eggs. Field and laboratory observations have revealed that tilapia also interfere with the reproductive behavior of desert pupfish (Schoenherr 1980). The extent to which this type of interference has suppressed pupfish reproduction is not known. Largemouth bass are voracious predators that are capable of eliminating pupfish completely from small spring habitats (Miller and Pister, 1971).

Desert pupfish in the Salton Sea area have been infected by a parasitic copepod (anchor worm) of the Lernaeidae family. These parasites were probably contracted from one of the introduced exotic species, possibly *Tilapia zillii*. Even though this fish was spot-checked for parasites and diseases before it was introduced into the area in 1973, it is possible that this parasite and other fish diseases have entered the system on fish that were not inspected.

A brackish water snail of the Thiaridae family was recently introduced by unknown methods into a small stream near North Shore on the Northern periphery of the Salton Sea. These snails could compete with the desert pupfish for food inasmuch as some food items are common to both organisms. Also, the snail may feed on pupfish eggs, and could be an intermediate host for parasites transmittable to pupfish. The natural dispersal of this snail throughout the Salton Sea ecosystem appears to be limited by salinity. It is not known what effect it would have on the survival prospects of the desert pupfish if it does become established throughout the system.

D. *The inadequacy of existing regulatory mechanisms.* California State law (The Endangered Species Act of 1970, Chapter 1510, Stats. 1970) prohibits the taking of desert pupfish without a permit. However, State law does not provide any protection for habitats that support endangered species.

E. *Other natural or manmade factors affecting its continued existence.* The exotic aquatic weed, *Hydrilla verticillata*, was recently introduced into the All American Canal. This plant is capable of spreading rapidly and is very difficult to control. Consequently it is possible that this acquatic weed may soon find its way into habitats that support desert pupfish. It is not known what the direct effect of its establishment would be on the desert pupfish. However, the extreme methods of chemical, mechanical, and biological control that have been used in other areas where this plant has become established would be likely to have a detrimental effect upon pupfish habitat.

The extensive use of pesticides in areas that border pupfish habitat has previously caused occasional localized fish kills. The population in Quitobaquito Spring is located downwind from nearby farms in Mexico that are sprayed with organophosphates and chlorinated hydrocarbons. Recent studies of this population (Kynard 1981) revealed that the fish in Quitobaquito Spring contained detecable levels of both parathion and DDT derivatives in the late 1970's. Because of the extremely restricted range of the desert pupfish, any major accidental spills or increased levels of pesticide drift could have a devastating impact on the entire population in Quitobaquito Spring.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in the preparation of this proposed rule. Based on this evaluation, the preferred action is to propose to list the desert pupfish as endangered. The now localized distribution of this fish, competition from exotic species, predation pressure, and continued adverse modifications of habitat (i.e., groundwater pumping, pesticide application, changes in water conveyance facilities) indicate it is imminently threatened with extinction; therefore endangered classification is warranted. Recent status surveys have been instrumental in assessing essential habitat and the present condition of the desert pupfish. Overcollection is not the primary threat facing the desert pupfish. For these reasons the Service does not believe that determining critical habitat for the desert pupfish will contribute to the species' further decline; hence, this proposed rule includes a proposal for critical habitat.

Critical Habitat

Critical habitat as defined by Section 3 of the Act means: (i) The specific areas within the geographical area occupied by the species at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection, and (ii) specific areas outside the geographic area occupied by the species at the time it is listed upon a determination that such areas are essential for the conservation of the species.

Section 4(a)(3) of the Act requires that critical habitat be designated to the maximum extent prudent and determinable concurrently with the determination that a species is endangered or threatened. Critical habitat is being proposed for the desert pupfish at Quitobaquito Spring, Organ Pipe Cactus National Monument, Pima County, Arizona, and portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California. The proposed areas include approximately one-half acre of aquatic habitat at Quitobaquito Spring, and approximately 11 miles of stream channel along San Felipe Creek and two of its tributaries. A riparian buffer zone of at least 100 feet is deemed necessary around the spring and along the tributaries and mainstem of San Felipe Creek because any activities that are carried out adjacent to the spring and stream channel may have a direct impact on the quality of aquatic habitat for desert pupfish; this riparian buffer zone is believed to be essential to the conservation of the species. The regulations promulgation section contains a legal description of the proposed critical habitat.

The areas proposed as critical habitat satisfy all known criteria for the ecological, behavioral, and physiological requirements of the species. The species successfully reproduces in Quitobaquito Spring and the designated reaches of San Felipe Creek, Carrizo Wash, and Fish Creek Wash. These areas also provide adequate food and cover. Perhaps most importantly, these areas are also isolated or at least partially isolated, from predatory and competing exotic fishes. Because the desert pupfish

is non-migratory, the areas it inhabits must fulfill all the requisites for survival and successful reproduction.

Section 4(b)(8) requires, for any proposed or final regulation which designates critical habitat, a brief description and evaluation of those activities (public or private) which may adversely modify such habitat or may be affected by such designation. It should be emphasized that critical habitat designation may not affect each of the activities listed below, as critical habitat designation affects only Federal agency actions through section 7 of the Act.

1. Withdrawal of water either directly or indirectly from San Sebastian Marsh could destroy or reduce the suitability of this habitat for desert pupfish.

2. Stocking of additional exotic fish or other non-endemic species into waters within the critical habitat may introduce parasites and increase the incidence of predation on desert pupfish.

3. Other activities (which, though not anticipated at this time, could conceivably occur in the foreseeable future) could also reduce the habitat's suitability for desert pupfish. These activities incude geothermal development, stream channelization, increased recreational use, and the siting of transmission lines, roads, canals, or irrigation drains within the designated areas.

Section 4(b)(2) of the Act requires the Service to consider economic and other impacts of specifying a particular area as critical habitat. The Service will consider the critical habitat designation in light of all additional relevant information at the time the final rule is prepared.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by other Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402, and are now under revision (see proposal at 48 FR 29990; June 29, 1983). Section 7(a)(4) requires Federal agencies to informally confer with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in the destruction or adverse modification of proposed critical habitat. When a species is actually listed, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species, or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal activities that could affect the species and its habitat in the future include, but are not limited to, the following: The issuance of permits for mineral exploration or grazing, the development of the area for recreation, the issuance of permits for roads, transmission lines, canals, or irrigation drains, or the channelization of San Felipe Creek for flood control purposes.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered fish or wildlife. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce listed species. It also would be illegal to possess, sell, deliver, carry, transport, or ship any such wildlife which was illegally taken. Certain exceptions would apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered fish or wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22. Such permits are available for scientific purposes or to enhance the propagation or survival of the species.

If listed under the Act, the Service will review this species to determine whether it should be placed upon the Annex of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, which is implemented through section 8A(e) of the Act, and whether it should be considered for other appropriate international agreements.

Public Comments Solicited

The Service intends that any final rule adopted will be as accurate and as effective as possible in the conservation of each endangered or threatened species. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, private interests, or any other interested party concerning any aspect of these proposed rules are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to the desert pupfish;

(2) The location of any additional populations of desert pupfish and the reasons why any habitat of this species should or should not be determined to be critical habitat as provided by Section 4 of the Act;

(3) Additional information concerning the range and distribution of this species;

(4) Current or planned activities in the subject area and their possible impacts on the desert pupfish; and

(5) Any foreseeable economic and other impacts resulting from the proposed critical habitat.

Final promulgation of the regulations on the desert pupfish will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of the proposal. Such requests should be made in writing and addressed to the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, covered by the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Literature Cited

Barlow, G.W. 1958. High salinity mortality of desert pupfish, *Cyprinodon macularius*. Copeia 1958:231–232.

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Schoenherr, A.A. 1980. The role of competition in the replacement of native fishes by introduced species. *In* R.J. Naiman and D.L. Soltz (eds.). Fishes in North American Deserts. Pp. 173–203. John Wiley and Sons, New York.

Authors

The primary authors of this rule are Dr. Kathleen E. Franzreb and Mr. Edward M. Lorentzen, Sacramento Endangered Species Office, U.S. Fish and Wildlife Service, 1230 "N" Street, 14th Floor, Sacramento, California 95814 (916/440–2791; FTS 448–2791).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulations Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

1. The authority citation for Part 17 reads as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. It is proposed to amend § 17.11(h) by adding the following in alphabetical order under Fishes to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

(h) * * *

Species								
Common name	Scientific name	Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Fishes:							
Pupfish, desert	*Cyprinodon macularius*	U.S.A. (AZ, CA); Mexico.	Entire	E		17.95(e)	N/A

3. It is further proposed to amend § 17.95(e) for Fisher by adding critical habitat for the desert pupfish as follows:

§ 17.95 Critical Habitat—fish and wildlife

(e) *Fishes.*

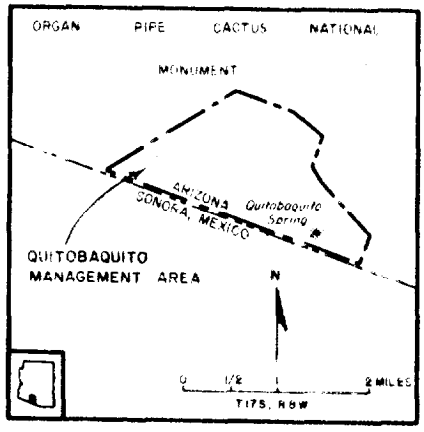
* * * * *

Desert Pupfish

(Cyprinodon macularius)

Arizona: Prima County.

1. *Quitobaquito Spring.* The spring is approximately 25 miles W/NW of Lukeville, Arizona in Organ Pipe Cactus National Monument, in T. 17 S., R. 8 N. The spring consists of approximately one-half acre in the Quitrobaquito Management Area. A 100 foot riparian buffer zone around the spring is included in the critical habitat.



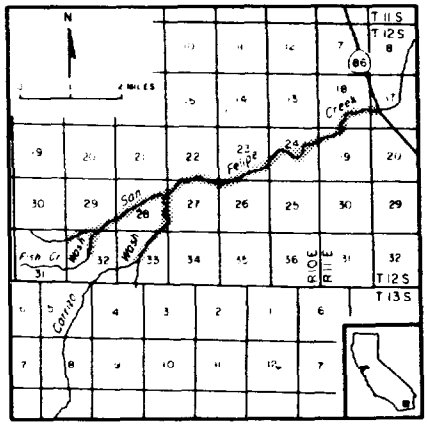
California: Imperial County.

1. *San Felipe Creek.* Approximately 8½ stream miles and 100 feet on either side of San Felipe Creek or the stream channel commencing from the State Highway 86 bridge crossing (approximately ¼ mi S of intersection of Hwy 78 and Hwy 86) upstream to the eastern boundary of Section 31, T. 12 S., R. 10 E.; including those areas of the stream channel in T. 12 S., R. 11 E., Section 17, 18, and 19; T. 12 S., R. 10 E., Section 22, 23, 24, 26, 27, 28, 29, and 32.

2. *Carrizo Wash.* Approximately 1¾ stream miles and 100 feet on either side of the stream channel commencing from the confluence of Carrizo Wash with San Felipe Creek upstream to the southern boundary of N½ Section 33, T. 12 S., R. 10 E., including

those areas of the stream channel in T. 12 S., R. 10 E., Section 27, 28, and N½ 33.

3. *Fish Creek Wash.* Approximately three-fourths of one stream miles and 100 feet on either side of the stream channel from the confluence of Fish Creek Wash with San Felipe Creek upstream to the southern boundary of N½ Section 32, T. 12 S., R. 10 E., including those areas of the stream channel in T. 12 S., R. 10 E., Sections 29 and N½ 32.



Constituent element for all four areas proposed as critical habitat include clean unpolluted water, free of exotic organisms, expecially exotic fishes, in small slow-moving desert streams and spring pools with marshy backwater areas.

* * * * *

Dated: May 5, 1984.

G. Ray Arnett,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 84-13126 Filed 84-15-84; 8:45 am]

BILLING CODE 4310-55-M